Cost variance analysis: A study of material consumption and prices at Deccan Fine Chemicals Pvt. Ltd.

&

Analyzing factors leading to payment delays and strategies for improving payment efficiency: A case study of Deccan Fine Chemicals Pvt. Ltd.

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Submitted in partial fulfillment of Master's Degree
Master in Business Administration in Finance
by

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Seat Number: 22P0280010

Under the Mentorship of

PROF. PURVA HEGDE DESAI

Goa Business School

Management Studies

GOA UNIVERSITY
DATE: 6th May 2024

Examined by:

Seal of the School

DECLARATION BY STUDENT

I hereby declare that the data presented in this Internship report entitled, **"Cost variance analysis: A study of material consumption and prices at Deccan Fine Chemicals Pvt. Ltd." & "Analyzing factors leading to payment delays and strategies for improving payment efficiency: A case study of Deccan Fine Chemicals Pvt. Ltd."** is based on the results of investigations carried out by me in the Discipline of Management Studies at the Goa Business School, Goa University, under the mentorship of Prof. Purva Hegde Desai and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities will not be responsible for the correctness of observations/experimental or other findings given the internship report/work.

I hereby authorize the University authorities to upload this dissertation on the dissertation repository or anywhere else as the UGC regulations demand and make it available to any one as needed.

Chaitali Chandrasekar Naik

Seat no: 22P0280010

Date: 06/05/2024

Place: Goa University

COMPLETION CERTIFICATE

This is to certify that the internship report **"Cost variance analysis: A study of material consumption and prices at Deccan Fine Chemicals Pvt. Ltd." & "Analyzing factors leading to payment delays and strategies for improving payment efficiency: A case study of Deccan Fine Chemicals Pvt. Ltd."** is a bonafide work carried out by **Ms. Chaitali Chandrasekar Naik** under my mentorship in partial fulfilment of the requirements for the award of the degree of **Master of Business Administration** in the Discipline of Management Studies at the Goa Business School, Goa University.

Date: 06/05/2024

Prof. Purva Hegde Desai

Project guide

Goa Business School ★ Goa University ★

Signature of Dean of School/HoD

School Stamp

Date: 06/05/2024

Place: Goa University

OFFER LETTER

Deccan Fine Chemicals (India) Private Limited
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Tel.: +91 832 2460110, 3049110 Fax.: +91 832 2284151
Corporate ID No. U24117TG2006PTC050967

To,
The Programme Director,
Management Discipline,
Goa Business School,
Goa University
Taleigao Plateau
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12th December, 2023

Dear Sir,

Further to your application, we are pleased to confirm internship for Ms. Chaitali Chandrasekar Naik at Santa Monica Works, Goa from 15th January, 2024 to 3rd May, 2024.

We wish her a fruitful learning experience at our site.

Deccan Fine Chemicals (India) Pvt. Ltd.

Yogesh Arora
Head – Human Resources,
Admin & CSR

INTERNSHIP CERTIFICATE

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Corporate ID No. U24117TG2006PTC050967

3rd May, 2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms. Chaitali Chandrasekar Naik,** a student of Goa University has completed her Internship in Materials Department at Deccan Fine Chemicals (India) Private Limited, Santa Monica Works, Corlim-Goa from 15th January, 2024 to 3rd May, 2024.

We wish her success in her future endeavors.

Deccan Fine Chemicals (India) Private Limited

Yogesh Arora
Head- Human Resources,
Admin & CSR

ACKNOWLEGMENT

I would like to take this opportunity to express my sincere gratitude to all those who helped me some way or the other to complete my research during the 16 weeks of Internship at Deccan Fine Chemicals Pvt. Ltd.(Deccan), Corlim, Goa.

Firstly, I would like to thank our Mentor, Prof Purva Hegde Desai for all her guidance during the Internship and preparation of the reports.

I am sincerely grateful to Mr. Yogesh Arora, Head HR at Deccan for providing me with the opportunity to intern at their company as a part of my academic curriculum.

I would like to express my deepest gratitude to Mr. Kishore Parab, for all his guidance throughout my Internship. Working with him has been a great privilege, and I am grateful for all the knowledge and insights he shared with me.

I would also like to mention a word of appreciation to the entire staff of Deccan, who directly and indirectly helped me in the successful completion of this project. I will always cherish the experience I gained during my internship, and I look forward to applying the knowledge I acquired during my internship in my future endeavors.

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EXECUTIVE SUMMARY

This executive summary encapsulates two vital aspects of financial management within Deccan Fine Chemicals Pvt. Ltd.: Cost Variance Analysis and Payment Delay Analysis. In today's dynamic business landscape, effective financial management is crucial for sustaining operations and fostering growth. Through meticulous research, the studies uncovered intricate web of factors contributing to variances and payment delays within Deccan.

The first research investigates cost variance analysis at Deccan, focusing on material consumption and price. By analyzing secondary data provided by the company, the study employs variance analysis techniques to understand the deviation between the standard and actual costs and their impact on profit margins. Findings reveal significant usage and price variance, attributed to procurement decisions and market dynamics. Operational inefficiencies in raw material procurement and geopolitical factors are also highlighted.

The second research on payment delays within Deccan, explores the complexities of payment delays, encompassing both internal operational challenges and external market dynamics. Through a blend of quantitative data analysis and qualitative research methods, the research delves into the nuance of Deccan's payment ecosystem. The findings of this research highlights the prevalence of international customers and the efficacy of a Supplier Finance Scheme in managing cash flow. Moreover, the study identifies critical operational inefficiencies contributing to payment delays and proposes pragmatic strategies for improvement.

The study also discusses additional aspects, including tasks undertaken during internship, challenges encountered such as gathering data, managing time with superiors and working with partial data, while conducting the research and learnings derived throughout the internship

DECCAN FINE CHEMICALS PVT. LTD.

1. CHAPTER 1: PROFILE OF THE COMPANY

1.1. Birds Eye View

Deccan Fine Chemicals Pvt. Ltd. is a manufacturing company focusing on custom manufacturing of active ingredients and advanced intermediates for agrochemicals, fine, and specialty chemicals sectors based in Corlim, Goa. Deccan is jointly owned by Mitsubishi Corporation (Japan), Belchim Management (Belgium), Mr. G.S. Raju & Family, and Deccan employees. Deccan Fine Chemicals makes every product exclusively for a specific customer and does not sell the same product to other customers. They envision being a preferred strategic supplier of value-added services and products to learning crop protection, pharmaceutical, and specialty chemical companies in the world. Active ingredients manufactured by Deccan are directly shipped to global formulation plants for making the finished branded formulation. Advance intermediates manufactured by Deccan are sent to chemical plants for further chemical processing. Deccan exports manufactured products to the USA, Switzerland, Belgium, Germany, Japan, France, South Korea, Columbia, Italy, Brazil, Argentina, South Africa, etc. With its differentiated value position of “exclusive partnership”, Deccan has a strong relationship with leading crop protection companies and specialty chemical companies of the world. Deccan’s business growth has been based on high quality, sustainable and self-production capability, affordable prices, and a proven track record of completing new projects on time. Deccan has received numerous performance awards from its top customers. Deccan is also recognized by the Ministry of Commerce, GOI as a Two Star Export House.

1.2. Vision and Mission of the Company

- Deccan only concentrates on "Custom Manufacturing" goods for its clients.
- Deccan aspires to be the go-to supplier for the top chemical companies worldwide.
- Deccan pledges to construct and run India's top-notch facilities for producing fine chemicals safely.
- Deccan aims to establish itself as India's top custom manufacturing company, trusted by top chemical companies worldwide, by means of steady, measured expansion.

1.3. Workforce

Deccan Fine Chemicals have employees of over 750 people who work in three shifts — the first one begins from 8:00 am to 4:00 pm, the second shift beg ins at 4:00 pm to 12:00 am and the third shift begins from 12:00 am to 8:00 am. Employees who work for more than 4 hours are paid overtime salary. The employees work for five days and get two days off after every night shift the off days keep changing. There are over 250 employees who work the general shift from Monday to Friday from 8:30 am to 5:30 pm and have an off on Saturdays and Sundays.

1.4. Business Areas

1. Agro-chemicals

Deccan's synthesis expertise in complex molecules, coupled with its experienced team and reliable quality, allows it to excel in Crop Protection. With an emphasis on producing herbicides, fungicides, insecticides, and other products on demand, Deccan works closely with customers to provide accurate, timely solutions that take advantage of market opportunities. With the help of

ISO-regulated resources, economical production, and a trained workforce, Deccan provides scalable customized solutions that maximize value for clients in the crop protection industry.

2. Pharmaceuticals and Animal Health

Deccan is a custom manufacturer of pharmaceutical intermediates and animal health products for aquaculture, pets, and farm animals. Deccan's ISO and cGMP certifications, which prioritize quality and compliance, guarantee adherence to the highest standards and satisfy requirements and laws for clients in the pharmaceutical and animal health industries. Deccan is positioned to lead this segment's custom manufacturing market as demand increases in developing nations.

3. Specialty chemicals

Deccan offers customized manufacturing services for specialty chemicals used in the rubber, polymer, dye, and pigment industries. Our ISO-regulated facilities and vast experience, coupled with a focus on quality and dependability, guarantee customized solutions that effectively and efficiently satisfy unique customer requirements.

4. Contract research services

Deccan provides services for process research and development to its clients in all of its business domains. Deccan provides services like sample preparations, process development, route screening, proof of principle, safety and toxicology studies, analytical development, and scale up

(kilogram-laboratory / pilot and industrial scale plant production) in a timely and cost-effective manner because of its state-of-the-art physical assets and highly skilled R&D professionals.

1.5. Products and Services Offered

MATERIAL	MATERIAL DESCRIPTION
14000269	PICOXYSTROBIN TECHNICAL
14000181	CPTAP,,BULK
14000081	THIAMETHOXAM TECHNICAL 60 KG (SIL CMT)
14000133	Thiamethoxam (Using Cct.TL)-US/EU/JP/S
14000147	Thiamethoxam (Using Cct.TL)- CN
14000249	Thiamethoxam (Using Cct.TL)-ARGENTINA
14000167	DCP-KETONE (DISTILLED)
14000180	2,4,6-Trichloroaniline
14000146	Thiamethoxam (Using Cct.TL) - KR
14000050	ACTARA 25 WG 50 KG - KR 22K
14000051	ACTARA 25 WG 50 KG 050
14000132	Thiamethoxam (Using Cct.TL)- BRA
14000150	PRETILACHLOR TECHNICAL 220 KG...
14000013	Metobromuron
14000265	RATM 2nd Gen
14000082	THIAMETHOXAM TECHNICAL 60 KG (CMT FFP)
14000271	Zeolite-1 Slurry

14000046	PRETILACHLOR TECHNICAL 220 KG INA
14000042	PRETILACHLOR TECH. 94% MINIM 220 KG - JP
14000182	TNCF

1.6. Sections within the Organization

1. Production Department

The production department meticulously manages change activities, ensuring safety, health, and environmental risks are controlled, employing a proactive approach. Utilizing a Distributed Control System (DCS), manned by a small team, alongside local exhaust ventilation and containment measures, they maintain safety standards. The department follows a Bund concept for chemical overflow control and innertization for air isolation, employing personal protective equipment (PPE) and a Material Safety Data Sheet (MSDS) system. At the PTC & MTB Manufacturing Plant, herbicides are produced in liquid and powder forms, with production schedules discussed daily. The Finish Product Processing (FPP) Department formulates insecticide products, while the CPTAP Department manufactures fungicides, utilizing color-coded work instructions. The ThiaMethoXam (TMX) 2 Department handles insecticide production, and the TMX 3 Department produces liquid and powdered products, each with specific production processes and annual output targets.

2. Human Resource Department

The Human Resource Department is vital for employee well-being, handling payroll, benefits, hiring, firing, and tax law compliance. They manage leave policies, track attendance through Flexi

Leave, and maintain shift schedules. Key functions include recruitment, employee placement, training, policy development, employee relations, performance appraisals, payroll administration, legal compliance, retirement, and conflict resolution, including conducting exit interviews. The contractor hiring process involves the HR sending a yellow form to the contract engineer for new laborer details, which is then verified by the contract supervisor and submitted to the main gate for approval. After medical clearance by a doctor and safety training approval, the form returns to HR for final verification and data entry into the employee database. Once approved, contractors receive ID cards for site entry. Contractors must maintain attendance registers and submit monthly reports to HR, including PF and ESIC deductions.

The Human Resource Department undertakes planning and organizing functions to ensure the achievement of organizational objectives. Through SMART (S – Specific, M – Measurable, A – Achievable, R – Relevant, T – Time-Bound) goal-setting, they establish objectives aligned with Deccan values, covering areas such as Health, Safety, Environment (HSE), Quality, Response, Cost, and People. These objectives are cascaded from site to department to individual levels, with specific key performance indicators (KPIs) selected to measure progress. Performance against objectives is regularly monitored and reviewed to drive continual improvement. Additionally, the department manages the recruitment and selection process, starting from requisition submission by the Head of Department (HOD) to internal notifications, screening, and final interviews, ensuring a comprehensive and fair selection process for potential candidates.

3. Administration Department

The Administration Department is responsible for ensuring the welfare of both the site and its workers. It oversees various employee welfare facilities, including uniforms, rain gear, towels,

soaps, safety shoes, restroom and change room facilities, as well as canteen services and transportation arrangements such as buses, cycles, and taxis. Additionally, it manages the maintenance of furniture, computers, stationary, Xerox machines, and garden areas. The department ensures compliance with contractor welfare management and limits employee overtime to 55 hours. It also supervises housekeeping staff and enforces employee code of conduct regarding attire and grooming. Records of employee facilities are meticulously maintained manually on registers.

4. Finance Department:

The Finance Department manages finances using G-SAP software and manual Excel sorting, comprising Accounts Payable, Accounts Receivable, and Indirect Tax sections. Accounts Payable handles vendor payments and GST invoicing, while Accounts Receivable manages customer banking transactions. The Indirect Tax Team verifies GST authorization. Payment cycles occur on the 10th and 25th of each month, with foreign vendors exempt from GST. Payment terms range from 30 to 90 days, with interest charged for late payments. TDS deductions vary based on vendor type and turnover. EOU status exempts duty payments. E-Invoices and E-way bills are mandatory for turnovers exceeding 10-20 lakhs. Purchase orders are maintained for orders exceeding 25,000/-. Foreign transactions are retained in foreign currency to mitigate exchange rate risks.

The Finance Department, led by the Finance Head, sets and tracks Key Performance Indicators (KPIs) monthly, focusing on internal audit monitoring, fixed and capital costs, and service analysis. It aims for continuous improvement through corrective actions, monthly meetings, and knowledge management tools.

The Finance Department at Deccan Fine Chemical India Pvt. Ltd. manages budgeting, generates MIS reports, conducts product costing and capacity calculations, monitors and closes capital budgets, and evaluates production efficiencies by comparing raw material and packaging material consumption against standards.

5. Quality Assurance and Control Department:

The Quality Assurance and Control Department ensures product quality by conducting rigorous testing and analysis. Quality Assurance focuses on process improvement, signing service level agreements for timely results, and handling government licensing. Quality Control verifies final product compliance, conducts testing, and oversees inspection before dispatch. The department operates HPCL and GC labs for analysis, adheres to ISO standards, and manages contamination prevention, regulatory compliance, and customer complaints. QA proactively prevents defects, while QC reacts to defects, emphasizing testing and inspection.

6. IT Department:

The IT Department manages critical systems such as call manager, voice, and care security servers, partnering with suppliers like Airtel, BSNL, Jio, HP, Dell, and Reliance. It oversees CISCO Jabber for communication and Microsoft Exchange for emails, along with G-suite applications. IT policies include guidelines for email and internal usage, along with a robust password policy. Data backup is performed bi-weekly, with saved information stored in shared and home drives to ensure data integrity and recovery in case of system crashes.

7. Warehouse and Stores Department:

The Warehouse and Stores Department manages raw material procurement and dispatch of finished goods, primarily sourcing locally within India. It maintains 80% stock of finished goods and 75% of raw materials, ensuring timely delivery to customers with proper inventory management. Following the FIFO rule, they prioritize inventory rotation and conduct monthly shelf-life reports to prevent dead stock. With a 130-crore inventory, they handle direct and indirect purchasing, maintaining key performance indicators to avoid damaged or expired materials. The warehouse is equipped with fire alarm systems and 9 forklifts across 9 warehouses. The Stores Department organizes materials with specific storage levels and tracks inventory through a coded system for easy reordering.

2. INDUSTRY ANALYSIS

2.1. Porter's 5 Forces:

1. Threat of New Entrant – Low

The agrochemical industry has low risk of new entrant due to high barrier to entry, as agrochemical industry requires high investment in research and development and has to adhere to several regulatory compliance which makes it difficult for new entrants to compete with established companies.

2. Bargaining Power of Suppliers – High

The bargaining power of suppliers is high in an agrochemical industry as manufacturers hold power due to patents and chemical compositions and due to limited number of suppliers of raw materials.

3. **Bargaining Power of Buyers – High**

The bargaining power of buyers is high in an agrochemical industry as buyers have a wide variety of options. Also, farmers becoming more price-sensitive, look for value added solutions than just the product.

4. **Threat of Substitutes – Moderate**

The threat of substitutes is moderate in an agrochemical industry as substitute products can be developed by an agrochemical company but it is still accompanied by several concerns. Also, the current increasing demand for organic alternative is a big threat to this industry.

5. **Rivalry amongst Existing Firms – High**

Rivalry amongst existing firms is high because of the presence of large number of agrochemical companies competing for market share.

2.2. PESTEL Analysis:

1. Political Factors

The use of agrochemicals are regulated by government worldwide to ensure certain safety norms. Some of the factors that impacts the operations include trade protection measures including import or export restrictions and regulations, the imposition of hefty tariffs and quotas, or the cancellation of materially modified trade agreements. Disruption of supply chain and changes in demand can happen in the case of unrest in key agricultural regions.

Political issues have a significant impact on the factors that could affect Deccan's long-term profitability in a given country or market. Deccan exports to over a dozen countries, which puts it at risk from threats from the environment and different political systems. Tax laws and international trade policies are two areas where Deccan's operations are significantly impacted. The United States, Switzerland, Belgium, Germany, Japan, France, South Korea, Columbia, Italy, Brazil, Argentina, South Africa, and other significant regions are home to Deccan. This means that the activities are subject to changes in US trade laws. In a similar vein, the Deccan and other chemical industries in India would be greatly impacted by the Goods and Services Tax (GST).

2. Economic Factors

Rise in income in developing countries can increase the demand for agrochemicals in those countries. Also, profitability of exports and imports can be affected by currency rate fluctuations. Changes in currency rates may have an impact on how much the business must pay its foreign supplier, which may have an impact on the profit margin. The chemical sector is also significantly

impacted by the economic recession. They run the danger of suppliers making late payments or if their clients go out of business, which might cause their payment to be delayed even further.

The host country's exchange rates and currency stability. Currency exchange rates can have a big impact on Deccan's business since the bulk of its revenue comes from exporting agrochemicals, advanced intermediates, and active ingredients for fine and specialty chemicals. The amount that the company must pay its foreign supplier may vary depending on exchange rates, which could affect the profit margin. This company produced a chemical that was used to sanitize cars and buildings, so the COVID-19 recession initially affected it due to supply chain disruptions. However, it also raised demand for chemicals.

3. Social Factors

A shift in consumer preferences towards organic or sustainable agriculture, with a negative impact on the demand for conventional agrochemicals, could result from increased awareness about environment and health. Public perception can be damaged and stricter regulations or boycotts can be imposed due to growing concerns about the safety and environmental impact of agrochemicals. Rising demand for organic alternatives can create pressure on agrochemical industry.

Since culture has a significant influence on the operations of the chemical industry, Deccan's corporate culture must adapt to the local way of life in order to maintain its exports to over 12 countries. This includes changes to manufacturing, marketing, and sales strategies. Language is another factor they need to consider, especially if they are conducting business in countries where English is not widely spoken and the locals take great pride in speaking their own language, such as Switzerland, Belgium, Germany, Japan, France, South Korea, Columbia, Italy,

Brazil, Argentina, South Africa, etc. Companies need to be mindful of the various religious holidays that are observed in each country in which they conduct business. Any industry involved in the chemical industry must adjust to the different work schedules and days of the week observed in other countries.

4. Technological Factors

The agrochemical industry is strongly influenced by developments in agricultural technologies such as precision farming and biotechnology. The development and use of new agrochemical products may be influenced by these innovations.

The chemical industries work closely with their clients to find state-of-the-art technical solutions by combining technology and process engineering. Technology must continue to increase the efficiency of processes for products that are already on the market by developing fewer-stage processes, increasing yield and product concentration, accelerating reactions, or resolving production issues in the agrochemical industry. Chemical industry technology should also provide process safety services, hazard analysis and risk assessment services, and evaluation of fire and explosion hazards in addition to chemical reaction hazards in order to guarantee high quality and secure production.

5. Environmental Factors

Numerous environmental elements have an impact on how the chemical sector operates in a nation. They must make sure they adhere to the necessary procedures for handling trash and lowering the

amount of energy needed for both manufacturing and finishing activities. The sector must ensure that they adhere to all applicable ISO standards. The Quality, Health, Safety, and Environment (QHSE) Policy must be implemented by the chemical sector. The chemical industry should carefully assess the environmental criteria necessary to operate in those areas before entering new markets or opening a new operation in an existing market.

6. Legal Factors

For companies in the agrochemical sector, it is essential to comply with local and international rules on pesticide use, product labelling and environmental impacts. There may be substantial economic and reputational implications in civil proceedings concerning the effects of agrochemicals on health or environment.

3. COMPANY ANALYSIS

3.1. SWOT Analysis:

1. Strengths

- Deccan possess customization capabilities wherein it tailors the agrochemical products to the specific needs and preferences of customers.
- Deccan being a custom-based manufacturer is very agile and adaptable. This agility enables the firm to respond quickly to changing market trends, customer preferences, and regulatory requirements, giving them a competitive edge in dynamic environments.

- Deccan has built long-term relationships with its customers based on trust, reliability, and exceptional service. It understands the unique needs of each of its customer and provide tailored solutions fostering loyalty and enhancing customer satisfaction and retention.
- A strong base of skilled and experienced control system engineers well versed in handling large-scale complex chemical manufacturing operations and real-time monitoring enables complete control of process parameters.

2. Weaknesses

- Being a custom based manufacturer, the company heavily relies on the orders from their clients.
- Deccan has to depend on qualified and trained personnel in order to develop custom products. The availability of such talent may be a limiting factor in scaling up.

3. Opportunities

- Deccan can respond to the growing demand for biological and biopesticide solutions by developing and manufacturing customized biological formulations. These can be aligned with the trend towards sustainable and environmentally friendly agriculture.
- Deccan can also adapt to organic farming by also developing products suitable for organic farming practices to tap into the expanding market for organic produce.
- Creating agrochemical products that promote water efficiency in agriculture, such as soil conditioners or water-retaining additives, can align with the global need for water conservation in farming.

4. Threats

- Being a global exporter, adhering to regulatory standards for custom formulations can be complex, as different regions may have specific regulations regarding the composition, labeling, and use of agrochemical products. Failure to comply with these regulations can lead to legal issues and fines.
- Environmental Accidents and Pollution: Chemical manufacturing processes may involve hazardous materials. Accidents, spills, or emissions can result in environmental damage, regulatory penalties, and negative public perception.
- Since Deccan operates in a global market, trade tensions, tariffs, or geopolitical conflicts can impact the movement of raw materials and finished products, affecting the company's supply chain and profitability.

3.2. VRIN (VRIO) Analysis:

1. Valuable

Deccan is a global leader in its industry, with a solid reputation for reliable, high-quality product delivery. Customers greatly appreciate its products, which are renowned for their high levels of differentiation because they think they are special and better than those of rivals. Active chemicals are created by Deccan's effective production method and sent straight to factories across the globe for formulation. The organization maintains high rates of productivity and retention thanks to a committed and well-trained staff. With its extensive distribution network and services for process research and development, Deccan consistently grows its clientele, which boosts revenue. In addition, it makes large investments in R&D to generate novel ideas and eco-friendly products.

2. **Rare**

Deccan is a unique player in its industry because of its wide global reach and diverse clientele, which also contribute to its financial stability and widespread recognition. Because of these qualities, Deccan's products are in high demand and rivals find it difficult to match its achievements. The company's distribution network is a valuable asset, but because it takes a lot of time and money to match its efficiency and reach, potential competitors face a significant barrier to entry.

3. **Inimitable**

Deccan's financial resources are difficult for rivals to replicate because they were amassed over time through consistent profitability and demand high earnings over a long period of time. Customer loyalty and recurring sales are encouraged by the brand's reputation for high-quality products, despite attempts by rivals with significant R&D budgets to imitate them. Deccan's distinctiveness is further preserved by the expensive and illegal nature of imitation due to its patent protections. Likewise, the elaborate distribution network that it has painstakingly built over the years presents a formidable obstacle for rivals because it would take a substantial financial outlay to duplicate the system.

4. **Non-Substitutable**

The company's financial stability allows it to investigate the possibilities for new product innovations and launches. Because of its strong financial position, the company has been able to

focus on developing new products and maintaining consistent quality across a number of foreign locations. Since the company's financial strength supports it, its efficient and well-managed distribution system gains from it. Financial stability is essential for Deccan to be able to capitalize on opportunities and prospects both inside and outside the company.

4. CHAPTER 2: PROJECT 1 - COST VARIANCE ANALYSIS: A STUDY OF MATERIAL CONSUMPTION AND PRICES AT DECCAN FINE CHEMICALS PVT. LTD.

4.1. Introduction to the Research Topic

The agrochemical industry plays a pivotal role in supporting agricultural productivity and food security globally. For this industry to remain competitive and sustainable, efficient cost management is essential. Deccan Fine Chemicals Pvt. Ltd. (Deccan), a leading player in the agrochemical manufacturing industry, recognizes this significance of controlling costs, particularly those associated with raw material consumption and prices.

Cost variance analysis is a fundamental tool in managerial accounting, allowing organizations to understand and manage deviations between planned and actual costs. In the field of cost variance itself, (Ali-Momoh et al., 2022) investigates the relationship between variance analysis and financial performance in Nigerian consumer goods firms. Through empirical research employing the Generalized Method of Moments (GMM) estimator, the study emphasizes the significant influence of variances in labor and material costs on return on assets (ROA).

According to (Moheb-Alizadeh & Handfield, 2018), it's critical to comprehend how changes in the price of raw materials can affect manufacturing operations' Cost of Goods Sold (COGS). By employing mathematical programming models, this study identifies insensitivity intervals for price fluctuations and highlights the interrelationships among raw material prices on COGS variability.

(Kloock & Schiller, 1997) highlights the usefulness of marginal costing and activity-based costing (ABC) in pricing decisions by adding to the body of literature and examining how to apply them in short- and long-term decision-making processes. These studies provide fundamental insights into the broader landscape of cost variance analysis and its implications for managerial decision-making.

Additionally, in competitive business environments, (Choudhari, 2018) emphasizes the significance of cost reduction strategies in improving organizational performance and optimizing profitability. These findings highlight the practical implications of cost variance analysis for organizational profitability and performance improvement.

Moreover, studies focusing on raw material prices offer valuable insights into the broader context of cost variance analysis. In order to predict raw material prices for construction projects, (Lee et al., 2019) suggests using multivariate time series analysis, emphasizing the importance of accurate price predictions for informed decision-making. Similarly, (Arnold et al., 2009) explores optimizing raw material procurement strategies to minimize costs through Just-in-Time (JIT) procurement and warehouse policies, suggesting practical approaches for cost control through procurement optimization.

Within the domain of cost variance analysis, examining material consumption and prices holds particular significance, as these factors often represent substantial portions of a company's

expenses. The goal of this study is to delve into the complexity of cost variance analysis with reference to material consumption and prices at Deccan Fine Chemicals Pvt. Ltd., a company operating within the agrochemical manufacturing sector. With the help of an extensive literature review covering a range of topics related to costing, cost variance, raw material prices, utility management, and cost control, this study intends to contribute to the broader discussion on cost variance analysis and facilitate informed decision-making within Deccan Fine Chemicals Pvt. Ltd. and similar organizations operating in the agrochemical sector.

4.2. Literature Review

Costing

The article (Moheb-Alizadeh & Handfield, 2018) aims to investigate how fluctuations in raw material purchasing prices affect the minimum Cost of Goods Sold (COGS) in manufacturing operations. Employing a structured approach, it utilizes a mathematical programming model to assess the sensitivity of COGS to changes in raw material prices and identifies insensitivity intervals for price fluctuations. The raw material prices were used as independent factors, COGS as the dependent variable, and sensitivity variables (Δ) as moderators. Major findings of the study includes the identification of insensitivity intervals, quantification of COGS sensitivity to price changes, and highlighting the impact of interrelationships among raw material prices on COGS variability. The research suggests leveraging insensitivity intervals for supply chain contracts and vigilance regarding price volatility, and urges future research to address the constraints like simplified modeling techniques, assumptions of linear relationships, and a narrow industry focus, for broader applicability. The study by (Kloock & Schiller, 1997) aims to investigate the application of marginal costing and activity-based costing (ABC) in pricing decisions and cost control, utilizing a

methodology that combines theoretical analysis and empirical research based on questionnaires from German companies. It explores the theoretical relationship between these costing methods, identifies variables such as cost variances and budgeted costs, and examines their role as mediators in decision-making processes. The findings of the research indicates the effectiveness of both costing methods in short-term and long-term decision-making, with a trend towards combining marginal costing with other methods in German firms and suggests to include recording control-relevant partial variances and to conduct further empirical research.

Cost Variance

The article (Teoh Choon Hung & Jaya Kumar Shanmugam, 2023) critically assesses the relevance of standard costing and variance analysis in contemporary global industries, aiming to compile findings from diverse scholars, propose a research framework to understand industries' motivations for adopting these techniques, and offer recommendations for future research. Utilizing a comprehensive literature review methodology, the article synthesizes existing literature to analyze standard costing's significance in cost control, performance evaluation, inventory costing, budgeting aid, and decision-making support. Despite criticisms, empirical evidence from various regions underscores the continued importance of standard costing, emphasizing its benefits in simplifying cost interpretation and aiding resource allocation. Major findings of the study indicates a widespread utilization and relevance of standard costing across industries worldwide, supported by empirical evidence from diverse nations, highlighting its role in cost control, performance evaluation, and decision-making support. The article also suggests regular updates of standard costing systems and integration with Activity-Based Costing for improved effectiveness. However, the article by (Ali-Momoh et al., 2022) investigates the relationship between variance

analysis and financial performance in Nigerian consumer goods firms, aiming to fill a gap in existing literature. Utilizing data from 2010 to 2020 and employing the Generalized Method of Moments (GMM) estimator, the study finds that variances in labor cost and material cost significantly impact return on assets (ROA), underscoring the importance of variance analysis for decision-making and profitability. It emphasizes the need for management support for variance analysis models to enhance their effectiveness in profit planning and bottom-line realization, recommending that management consider variations in overhead costs, labor costs, and material costs when making dividend distribution decisions. The study's findings contribute both conceptually and empirically to understanding the relationship between variance analysis and financial performance in Nigerian consumer goods firms. The research by (Farkas et al., 2016) explores cost variances in cost accounting education, providing instructional resources centered around the Modern Watch Company case study. It aims to enhance understanding of cost variances across actual, normal, and standard costing systems, emphasizing their significance in managerial decision-making. The objective of the research was to analyze and manage disparities between expected and actual costs, promoting industry best practices in cost variance analysis. Utilizing various variables such as production data, overhead costs, and income statements, the study finds that the instructional materials effectively improve students' comprehension of cost accounting principles, highlighting the importance of practical case studies in enhancing learning outcomes. As the article (Milojević et al., 2015) explores the significance of variance analysis in manufacturing companies, it focuses on its role in understanding deviations between planned and actual results and enhancing operational efficiency and financial management. It delves into the budget creation process, highlighting the importance of accurately estimating costs and revenues, and discusses the influence of factors such as changes in production volume, manufacturing/selling

mix, effectiveness, and price fluctuations on business outcomes. The study underscores the pivotal role of variance analysis as a tool for management decision-making and performance improvement, alongside the value of software solutions like SAP in streamlining business operations and facilitating performance measurement within manufacturing operations. Additionally, the article suggests key strategies for manufacturing companies, including refining variance analysis techniques, optimizing the budget creation process, prioritizing efficiency and effectiveness in production, leveraging software solutions for streamlined operations, and fostering interdepartmental communication and collaboration to identify and address inefficiencies, ultimately aiming to enhance operational efficiency, financial management, and overall business performance. Also, the article (Jamaludin et al., 2014) underscores its aim to investigate the causes of cost variance and propose corrective actions. Through a mixed research approach combining questionnaire surveys and semi-structured interviews, the researchers aim to gather both quantitative and qualitative data to achieve a comprehensive understanding of the issue. The major findings of the study reveal the critical importance of comprehensive design documentation, effective client communication, stable financial resources, proactive management of material costs, and robust project management practices in minimizing cost variance and enhancing project outcomes. The article provides several suggestions to address these challenges, including thorough planning and organizing, effective controlling and monitoring, improved documentation practices, enhanced organizational support and personnel management, strategic procurement strategies, detailed scheduling, stringent storage security measures, and rigorous quality control checks. Implementing these recommendations is crucial to mitigate cost overruns and improve project efficiency and outcomes in the construction sector. The study by (Kabiru Dandago & Adah, 2013) explores the critical role of cost control in organizational management, emphasizing the

importance of setting realistic standards and conducting variance analysis to monitor and manage costs effectively. It highlights the continuous nature of cost control, stressing the need for prompt investigation of variances to identify areas of concern and implement corrective actions. Various variables related to cost control and variance analysis, including standard costs, actual costs, and variances, are discussed, influencing the relationship between cost control strategies and organizational outcomes. The findings from previous research underscore the significance of collaborative efforts between operators and top management in setting standards aligned with strategic goals. Additionally, the article emphasizes the importance of timely implementation of corrective measures to prevent future variances and optimize organizational performance. Overall, the article provides valuable insights into cost control practices and the role of variance analysis in achieving organizational efficiency and profitability, utilizing a literature review and analysis methodology. Also, the article (Voss et al., 1997) presents a comprehensive analysis of cost variance in a hospital orthopedic department, aiming to develop a predictive cost formula based on historical data and decompose cost differences into key components such as cost per procedure, resource utilization, case mix, and volume. Findings reveal a reduction in overall costs primarily due to fewer patient admissions and changes in medical practice influenced by management decisions, such as reducing bed occupancy rates. However, a shift towards more complex orthopedic surgeries led to increased costs. Notably, changes in medical care practices resulted in significant cost reductions, with fewer hospital resources utilized for patient care. The article suggests improvements in cost accounting systems, advocating for a deeper understanding of cost dynamics and the utilization of case-mix accounting systems to facilitate better cost analysis and management.

Raw Material Prices

The article (Lee et al., 2019) aims to propose a method for improving the accuracy of long-term cost predictions in construction projects, specifically focusing on the impact of raw material prices, such as iron ore. The objective of the research was to challenge the traditional approach of relying on past average values by advocating for the use of multivariate time series analysis, particularly Vector Error Correction Models (VECM), to enhance prediction accuracy. The factors such as price of iron ore, GDP of China, oil prices, and exchange rates were considered for determining the impact on the cost of iron ore required for steel production. The major findings of the article include significant causality between iron ore and oil prices, the presence of cointegration relationships among key variables, higher prediction accuracy of VECM compared to univariate time series analysis (ARIMA models), and substantial cost savings associated with VECM-based predictions. The article suggests that construction companies should consider employing multivariate time series analysis, such as VECM, for predicting raw material prices over long periods, especially during project finance decisions. Additionally, the study recommends further exploration of multivariate time series analysis methods for improving the prediction accuracy of various raw material prices beyond the conventional approach of using past average values. However, the article (Chen et al., 2015) discusses the modification of a production system model to include quality considerations in raw material procurement decisions, aiming to achieve cost savings. Sensitivity analysis reveals that neglecting quality considerations in procurement decisions may lead to underestimating total costs, highlighting the importance of integrating quality factors for cost savings and improved production efficiency. Practical implications include providing industry stakeholders with insights into optimizing procurement processes for cost savings while maintaining quality standards. Major findings of the study indicates significant shifts

in optimal parameters, emphasizing the necessity of incorporating quality costs for accurate production optimization. The article also suggests extending the model to incorporate economic production and raw material models, opening avenues for further research. Also, the article (Arnold et al., 2009) focuses on optimizing raw material procurement strategies, aiming to minimize costs through the integration of Just-in-Time (JIT) procurement, backlogging, and warehousing policies. The primary objective of the study was to analyze different procurement scenarios, considering both infinite and limited warehouse capacity, and develop optimal control policies to minimize total procurement and holding costs. Variables such as time, inventory level, procurement rate, demand rate, and warehouse capacity were utilized within a continuous-time optimization framework, where they directly influence the optimization process. Some of the findings of the study include identifying optimal policies based on warehouse constraints, proposing a decomposition approach to solve sub problems sequentially, and presenting an algorithm for numerical determination of optimal policies. The study also suggests exploring stochastic procurement prices, analyzing setup costs' impact, and extending the analysis to multiple product scenarios.

Utility

The article (Pothen, 2017) conducts a comprehensive analysis of global Raw Material Consumption (RMC) using Structural Decomposition Analysis (SDA) techniques, aiming to identify and quantify the drivers of RMC growth from 1995 to 2008. It finds that economic growth, primarily driven by rising final demand, was the dominant factor in increasing RMC, with infrastructure investments in industrializing nations contributing significantly. While structural changes in final demand reduced RMC slightly, increasing efficiency in global value chains

moderated its growth, particularly in Eastern European countries. The study suggests the need for policies addressing material demand and calls for further research to explore uncertainties related to data resolution and sectorial aggregation. Also, the article by (Ngai et al., 2013) introduces the Energy and Utility Management Maturity Model (EUMMM) as a framework to enhance energy and utility resource management practices in the textile manufacturing industry. Through collaborative practice research involving a Chinese textile manufacturing company, the study assesses the effectiveness of EUMMM, evaluates its practicality, and provides theoretical insights for improving environmental performance. The study employs field observations, interviews with company executives, and evaluation meetings to analyze variables such as energy and utility consumption, maturity levels of management practices, organizational policies, and technological innovations. The findings of the study indicates significant reductions in energy and water consumption, improved decision-making support, increased employee awareness, and enhanced environmental performance. The article recommends continued refinement and application of the EUMMM framework, systematic and progressive approaches to energy management, and further research to validate its effectiveness across different organizational contexts. Similarly the article (Cabrera & Raju, 2001) on Utility Analysis (UA) in organizational decision-making encompasses a comprehensive examination of various UA models, their applications, challenges in acceptance by decision-makers, and future research directions. Through a synthesis of existing literature, the article aims to explore extensions and variations of traditional UA models, understand decision-makers' needs, and propose strategies to enhance the accuracy, applicability, and acceptance of UA methods. The article employs a review and synthesis approach, drawing insights from studies on different UA models, theoretical frameworks, and empirical findings in human resource management. The major findings of the research include the introduction of new UA models like

RBN and RCL, along with mixed results regarding UA acceptance among managers, and the proposal of multi-attribute UA to incorporate broader organizational outcomes into decision-making. The article suggests assessing UA estimate accuracy, investigating factors influencing UA acceptance, comparing different UA models, exploring multi-attribute UA, and considering strategic UA aligned with organizational goals for future research.

Cost Control/ Cost Reduction

The article (Triwidatin, 2022) delves into the examination of raw material costs and direct labor costs' influence on the profit margin ratio in manufacturing companies, particularly within the household product sub-sector in Cibinong, Bogor. The primary aim of the research was to unveil the impact of these costs on profitability, with the overarching objective of providing valuable insights into cost-profit dynamics and guiding industry strategies. Raw material costs and direct labor costs were used as independent factors, while the profit margin ratio was served as the dependent variable. The study found a positive association between raw material costs and the profit margin ratio, whereas direct labor costs exhibited a negative impact on profitability. Notably, the combined influence of both costs collectively shapes the company's profitability. These findings underscore the significance of effective cost management strategies in optimizing profitability within the manufacturing sector. This research also provides valuable insights into the intricate dynamics of cost-profit relationships in manufacturing and offers practical implications for industry stakeholders. The research by (Mohd Al-Hattami et al., 2020) aims to explore the implementation of target costing techniques, tear-down analysis, and value engineering in a manufacturing firm to improve cost management and competitiveness. It employs a systematic methodology involving market analysis, cost assessment, and cost reduction strategies. The

variables such as product types, production costs, target prices, and actual costs, were used which served as mediators in cost management. Major findings of the research indicate significant cost reductions achieved through target costing methods, particularly with tear-down analysis and value engineering. The article suggests adopting target costing, transitioning from traditional pricing methods, and optimizing production processes. Also, the article (Föhr et al., 2019) delves into the economic ramifications of a large-scale bio-coal pellet plant in Finland's South Savo region, particularly examining how different raw wood materials influence profitability. By scrutinizing production volumes, raw material demands, supply costs, and required gross margins, the study underscores the pivotal role of wood type selection in determining economic viability and regional contributions. The key findings of the study elucidate varying economic impacts across wood types, with birch pellets exhibiting the highest annual economic benefit. These findings shed light on the crucial significance of raw material choice in shaping the profitability and regional significance of bio-coal pellet plants, offering crucial insights for similar ventures aiming to bolster sustainability and economic growth through biomass utilization. The study's meticulous analysis of variables such as supply costs, required gross margin, and final pellet price underscores the multifaceted nature of economic considerations in bio-coal pellet production, informing policymakers and industry stakeholders about the importance of strategic decision-making in resource selection and cost management for fostering sustainable bioenergy initiatives. The study by (Choudhari, 2018) underscores the critical importance of cost reduction techniques in enhancing organizational performance and maximizing profitability within competitive business environments. The major findings of the research emphasize the significance of various strategies, such as energy consumption management and supplier management, in reducing costs across operational facets. It highlights the need for ongoing monitoring, employee involvement, and

motivation in successful cost reduction initiatives, acknowledging their potential impact on financial performance and market competitiveness. The study also recommends implementing demand-driven energy consumption approaches and negotiating favorable supplier terms. However, the study's limitations, such as the lack of empirical evidence and overemphasis on theoretical concepts, suggest the need for further research to enhance practical relevance for organizations aiming to improve financial performance through cost management strategies. However, the article by (Buehlmann et al., 2011) aims to develop a statistical model addressing the least-cost lumber grade-mix problem, focusing on identifying the most cost-effective mix of lumber grades to minimize production costs in the wood products industry. Methodologically, it utilizes a mixed test protocol to gather simulated yields from a rough mill lumber cut-up simulator, constructs a polynomial cost-response surface based on the simulated yield data, and conducts an exhaustive search to identify the optimal combination of lumber grades. These factors, including lumber grades, simulated yields, and costs, primarily influences the relationship between the lumber quality mix and total production costs. Major findings of the study indicates a preference for lower-quality lumber unless specific part requirements necessitate higher quality, and the model's sensitivity to changes in costs consistently leads to lower-cost decisions compared to existing models. The article also suggests applying the developed model to similar industries facing material selection and cost optimization challenges.

4.3. Research Gap

The research gap encircles the absence of cost variance analysis studies in Goa, particularly within the agrochemical industry, where there's a lack of research on fluctuating material consumption and prices. Moreover, even though standard costing and variance analysis are recognized

techniques, their application within agrochemical manufacturing remains underexplored, along with the effectiveness of cost reduction strategies. Addressing these gaps is crucial for enhancing cost management, optimizing operations, and fostering sustainable growth within the agrochemical sector, necessitating comprehensive research efforts to fill these knowledge voids.

4.4. Research Questions

1. How have material consumption and prices at Deccan fluctuated over a specified period, and what trends and patterns can be identified from these fluctuations?
2. What are the factors influencing variances in material consumption and prices within Deccan?
3. How do variances in material consumption and prices impact the profit margins of Deccan?

4.5. Research Objectives

1. To analyze trends and patterns in material consumption and prices at Deccan Fine Chemicals over a specified period.
2. To investigate the factors influencing the variances in the material consumption and prices within the organization.
3. To identify the effect of variances on profit margins of Deccan Fine Chemicals.

4.6. Research Methodology

The study is based on the secondary data provided by the company for one of the 9 products (i.e. Product “XYZ”) manufactured in Goa, from January 2023 to December 2023. The names of the product and materials are kept anonymous as requested by the company. Variance analysis was

conducted using Excel, on the standard and actual data of consumption and price, as provided by the company and is presented in graphical form. F-test was performed to identify the significance of variances amongst the two variables of same population mean. The reason for variances were identified based on the decision matrix of the company. Also, the cost sheet is analyzed to find the impact of variances on profit margins of the company.

The formulas to be used to calculate the variances as given by (Choiriyah et al., 2022) are as follows:

Usage Variance = (Standard Quantity – Actual Quantity) * Standard Price

Price Variance = (Standard Price – Actual Price) * Actual Quantity

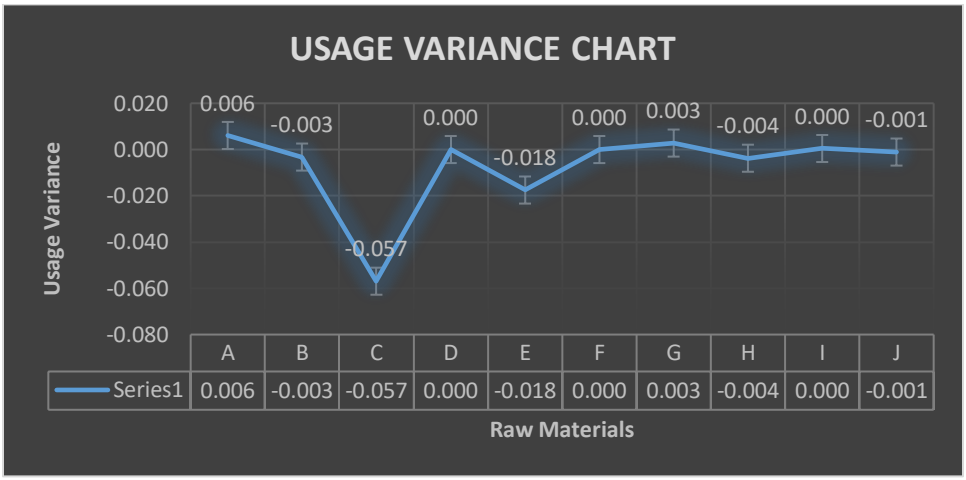
4.7. Data Analysis

4.7.1. Table 1:

This table displays the usage variance of the raw materials, used for the production of product "XYZ".

Usage Variance															
RM	**Months**														
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Actual consumption**	**Standard consumption**	**Variance**
A	0.742	0.746	0.719	0.728	0.734	0.731	0.717	0.716	0.723	0.723	0.715	0.719	0.726	0.720	0.006
B	0.073	0.068	0.063	0.066	0.069	0.074	0.058	0.063	0.066	0.069	0.073	0.071	0.068	0.071	-0.003
C	0.483	0.48	0.449	0.518	0.519	0.52	0.52	0.5	0.5	0.5	0.5	0.5	0.499	0.556	-0.057
D	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.000
E	0.808	0.81	0.857	0.91	0.919	0.82	0.806	0.837	0.877	0.92	0.91	0.852	0.861	0.878	-0.018
F	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.000
G	0.732	0.739	0.716	0.723	0.727	0.723	0.709	0.712	0.718	0.718	0.71	0.714	0.720	0.717	0.003

H	0.845	0.853	0.826	0.835	0.844	0.839	0.818	0.825	0.829	0.829	0.82	0.824	0.832	0.836	-0.004
I	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.000
J	0.052	0.052	0.051	0.051	0.051	0.051	0.05	0.05	0.051	0.051	0.05	0.051	0.051	0.052	-0.001
															-0.007



Out of all the materials mentioned, raw material A shows highest usage variance compared to the other raw materials. This shows that there is a large difference between the actual and predicted standard consumption of raw material A, which affects the incurred costs.

Raw material A is free supplied by the suppliers to Deccan as per the agreement between them, eliminating the possibility of price variance. However, it is a key raw material which contributes to 30% of the overall cost. Raw material G is also a key raw material that contributes to 35% of the cost.

Notably, the consumption of raw material A saw significant increase in January and February, with an average of 0.744 compared to the average of the other months, which was 0.723. This was because company was in the process of buying raw material H that could be sourced locally at that time.

Raw material H comes in 2 grades i.e. Grade I and Grade II. Grade I, sourced from European suppliers, offers superior yield rates, while Grade II, procured from alternative suppliers, does not yield as favorably. However, due to the geopolitical situation highlighted in part 4.7.1.1, Purchase price of Grade I was higher than that of Grade II.

In evaluating the procurement options for raw material H, company opted for Grade II, despite its inferior yield rate as it offset the higher purchase price associated with Grade I. However, this decision incurred significant yield loss across many other raw materials, particularly raw material A and G, leading to an increase in usage variance.

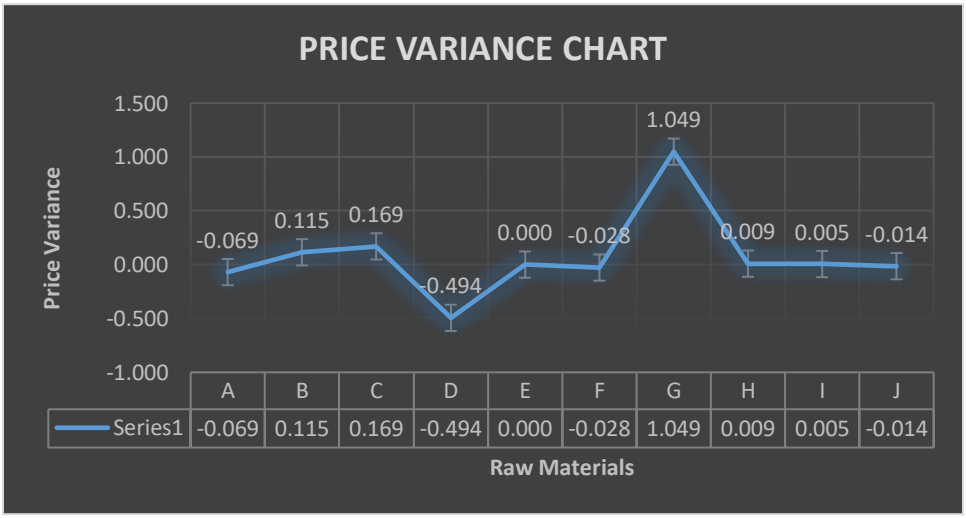
The graph further stipulates that raw material C exhibits the most favorable usage variance, signaling its exceptional efficiency compared to other raw materials. The optimal utilization of raw material C in production process, results in cost savings and enhanced resource efficiency. By outperforming other raw materials in terms of usage variance, raw material C emerges as a key contributor to operational excellence and financial performance.

4.7.1.1. Geopolitical situations: Gas pipeline through which Russia used to supply to Europe was damaged due to which energy prices in Europe shooted. Also, since there was sanction on Russia, there was no import happening from Russia in Europe of the raw materials source which was abandoned in Russia. Due to this reason Europe then had to source the raw materials from Indonesia or South Africa which resulted in increase in price.

4.7.2. Table 2:

This table displays the price variance of the raw materials, used for the production of product "XYZ".

Price Variance															
RM	**Months**														
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Actual Price**	**Standard Price**	**Variance**
A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.003	0.001	0.070	-0.069
B	0.319	0.266	0.257	0.251	0.242	0.239	0.236	0.223	0.215	0.210	0.193	0.185	0.236	0.122	0.115
C	1.209	1.255	1.271	1.290	1.205	1.065	0.933	0.841	0.802	0.788	0.761	0.737	1.013	0.844	0.169
D	8.972	8.900	8.939	8.998	8.848	8.760	8.765	8.697	8.670	8.645	8.617	8.611	8.785	9.279	-0.494
E	0.000	0.000	0.000	0.001	0.005	0.006	0.006	0.009	0.013	0.012	0.012	0.012	0.006	0.006	0.000
F	0.720	0.714	0.717	0.719	0.717	0.717	0.718	0.707	0.684	0.676	0.674	0.667	0.703	0.730	-0.028
G	8.314	8.303	8.696	9.002	8.830	9.027	8.857	10.069	8.508	9.716	9.120	7.976	8.868	7.820	1.049
H	2.391	2.452	2.642	2.505	2.512	2.345	2.548	2.487	2.078	2.147	2.285	2.199	2.383	2.373	0.009
I	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.025	0.025	0.025	0.025	0.025	0.026	0.020	0.005
J	1.587	1.574	1.580	1.585	1.579	1.581	1.582	1.570	1.565	1.562	1.550	1.499	1.568	1.582	-0.014
															0.074



The above table shows the price variance of the raw materials, calculated on Excel using the price variance formula (i.e. (Standard Price – Actual Price)*Actual Consumption). As can be seen in the above table, the price variance of raw material G is the highest compared to the other raw materials.

Deccan's procurement of raw material G from 3 Chinese suppliers encountered regulatory challenges when two of its suppliers were directed to halt production by government regulations.

During this period, the third Chinese supplier opportunistically increased their prices due to the restricted market competition. To mitigate potential disruptions in the supply chain, Deccan took the proactive decision to manufacture raw material G domestically in India in the years 2020 and 2021, despite the higher production costs compared to sourcing from China. At this time, Chinese prices were 8% higher than Deccan's price. However, with the subsequent lifting of bans on the other 2 Chinese suppliers, prices in the Chinese market normalized. Despite this, Deccan's prices remained 22% higher than the average Chinese prices, prompting customer suggestions to discontinue Deccan's production of raw material G. however, Deccan was contractually bound by a tri-party agreement highlighted in section 4.7.2.1.

4.7.2.1. Tri-Party Agreement

During the production of raw material G, Deccan encountered a significant challenge regarding the procurement of a key raw material necessary for its manufacturing process. While Chines manufacturers had access to this essential raw material locally, Deccan was compelled to source it from Europe, specifically Germany, resulting in higher procurement costs. The scarcity of this raw material in China further limited Deccan' options, preventing them from accessing the lower-priced Chinese market.

Deccan was contractually obligated by a tri-party agreement involving themselves, their European customers, and the raw material supplier. This agreement mandated Deccan to purchase the required raw material from Europe at a predetermined rate until December 2023. Despite the

elevated costs associated with sourcing from Germany, the European customer demonstrated their commitment by agreeing to absorb the increased expenses, thereby ensuring continuity in production.

4.7.3. Table 3:

This table is used to identify the percentages of price variance and usage variance in the total production of product "XYZ" for CY23.

Months	Price Variance	Usage Variance	Total Variance
Jan	0.51	0.08	0.58
Feb	0.57	0.15	0.72
Mar	0.99	-0.13	0.86
Apr	1.15	0.01	1.15
May	0.99	0.06	1.05
Jun	0.91	0.02	0.93
Jul	0.87	-0.14	0.73
Aug	1.64	-0.12	1.52
Sep	0.18	-0.06	0.12
Oct	1.09	-0.06	1.04
Nov	0.76	-0.15	0.61
Dec	-0.14	-0.10	-0.24
AVERAGE	**0.79**	**-0.04**	**0.76**
PERCENTAGE	**104.87**	**-4.87**	

In the above table, positive values indicates that the actual values were higher than standard values while the negative values indicate that the actual values were lower than the standard values. The total variance column represents the sum of price and usage variance, providing an overall variance figure for each month. As can be clearly identified in the above table, usage variance decreased in the calendar year 2023 indicating that the actual raw material consumption was lesser by 4.87%

than the standard consumption norms. Whereas there can be seen a drastic increase in price variance i.e. 104.87%, indicating that the total variance in raw material cost was due to the increased price of raw materials which offset the lowered usage variance.

4.7.4. F-Test[1]:

F-Test is conducted to identify the significance of variances amongst the two variables of same population mean.

F-Test Two-Sample for Variances

	Price Variance	*Usage Variance*
Mean	0.792952798	-0.036801462
Variance	0.219551767	0.009585379
Observations	12	12
df	11	11
F	22.90485939	
P(F<=f) one-tail	5.36654E-06	
F Critical one-tail	2.81793047	

Based on these results, we reject the null hypothesis and conclude that there are statistically significant differences in variances between the price variance and the usage variance. In other words, the variability observed in the price variance is significantly different from the variability observed in the usage variance.

[1] F-Test is conducted in statistics to compare the variability of 2 or more groups or sample. It evaluates whether the variances of the groups (which in this case is Price and Usage variance) are significantly different from one another.

This analysis shows that the variability in price variance differs significantly from the variability in usage variance, which may have implications for further analysis or decision-making processes.

4.7.5. COST SHEET FOR PRODUCT XYZ FOR CALENDER YEAR 2023

Description	STD Per Kg /Product	Actual Per Kg /Product	STD Price $/kg	Actual Price $/kg	COST IN Product ($/Kg)	COST IN Product ($/Kg)
A) RMC						
A	0.720	0.726	0.070	0.001	0.050	0.000
B	0.071	0.068	0.122	0.236	0.009	0.016
C	0.556	0.499	0.844	1.013	0.469	0.506
D	0.017	0.017	9.279	8.785	0.158	0.149
E	0.878	0.861	0.006	0.006	0.005	0.006
F	0.017	0.017	0.730	0.703	0.012	0.012
G	0.717	0.720	7.820	8.868	5.607	6.386
H	0.836	0.832	2.373	2.383	1.984	1.983
I	0.017	0.017	0.020	0.026	0.000	0.000
J	0.052	0.051	1.582	1.568	0.082	0.080
TOTAL					**8.38**	**9.14**
B) Variable Cost						
GOA: STEAM	0.007	0.006	47.43534737	47.43534737	0.33	0.28
GOA: ELEC PURCHASED	0.936	0.586	0.095732286	0.095732286	0.09	0.06
GOA: WATER	0.1	0.034	0.042827013	0.042827013	0.00	0.00
GOA: BRINE CHILLING	0.15	0.124	0.672698642	0.672698642	0.10	0.08
GOA: AIR & VACCUM	0.517	0.336	0.033325488	0.033325488	0.02	0.01
GOA: CHILLED WATER	1.000	0.466	0.342027207	0.342027207	0.34	0.16
GOA: NITROGEN PLANT	0.614	0.413	0.066315325	0.066315325	0.04	0.03
Ecology Cost					0.25	0.25
					1.18	**0.86**
C) Fixed Cost					**0.43**	**0.43**
Manufacturing Cost (B+C)					1.61	1.29
Total Cost of Production USD/Kg					**9.98**	**10.43**

Profit USD/Kg					1.69	1.24
Sale Price USD/Kg					**11.67**	**11.67**

Standard Profit Margin	Actual Profit Margin
14.48%	10.62%

Total shrink in profit USD/KG	Total production for CY23 in KG	Overall shrink in profit in USD
0.45	1942920	874,314.00

4.7.5.1. Interpretation of the cost sheet:

For an aggregate level for the year CY23, the company was supposed to earn a profit of $1.69/kg which was about 14.48%, but due to inefficiency in the raw material cost (RMC) the company has lost $0.45/kg which amounts to $874,314.00 for the overall production for the year, which is about 3.86% loss in profit margins.

The utility consumption of the plant was better, where the plant was able to utilize less utility and generate the additional revenue of $0.31/kg over the volume of 1942920kgs which amounts to $607862 for the specified tenure. However, the increase in RMC which amounts to $1478108 offsets the additional revenue generated by less utility consumption for the product.

Also, as can be seen in table 3, the whole increase in RMC was due to the increase in price variance which was about 104.87%, which outweighs the decrease in usage variance which was -4.87%. From table 2 it can be identified that the key raw material that contributed to this price variance was raw material G.

4.7.5.2. Reconciliation process:

- Sales Receipt – Raw Material Cost

When sales invoice will be raised, the sales receipt will be Selling price (11.67)*Total volume (1942920) = $xx ($22,681,518.77), which means that when the company bills this the customer pays. From this raw material cost will be subtracted.

- Sales Receipt – Raw Material Cost – 50% consumption that is higher than standard

Wherever the consumption is higher, consumption*50% will be the cost to the company as customers won't compensate due to inefficiency of the company.

4.7.5.3. Agreement under Reconciliation process:

At the end of every year the company does reconciliations with the customers for the volumes that are produced. In this agreement it is said that:

1. Raw material prices are compensated at actual
2. Usage variance if it is adverse it's at the account of the company whereas if it's favorable than 50% amount saved has to be shared with the customers.
3. All the favorable consumptions norms which are for the previous year becomes standard for the next year.

4.8. Research Findings

Raw material A despite being supplied free of charge, exhibited the highest usage variance among all materials, indicating significant deviations from predicted consumption levels. The decision to

procure Grade II of raw material H, aimed at offsetting the higher purchase price of Grade I, resulted in significant yield losses across various raw materials, particularly affecting raw material A and G. The analysis revealed that raw material G experienced the highest price variance compared to other raw materials, reflecting fluctuations is procurement costs. Despite doing well in terms of utility consumption which indicates that the plant was efficient in its production, the company suffered loss in profit margin for CY23 due to inefficiencies in raw material costs, particularly driven by the increase in price variance, which outweighs the decrease in usage variance.

4.9. Conclusion

Operational excellence in raw material utilization, illustrated by raw material C, should serve as a model for optimizing costs across all materials. Continuous monitoring and analysis of variances are essential for adapting procurement strategies and maximizing profitability. Also, since the higher RMC was due to the increase in price variance of raw materials, as per the agreement it will be compensated by the customers.

4.10. Managerial Implications

The analysis highlights a significant increase in price variance, particularly for raw material G, leading to a decline in profit margins. Deccan needs to prioritize strategies to control raw material costs.

1. **Supplier diversification:** Deccan should explore diversifying its suppliers for key raw materials like G to reduce dependence on any single source and prevent price manipulation.

For instance, instead of relying solely on three suppliers from one region (i.e. China), Deccan should diversify its supplier base by sourcing from various regions, including different countries. This approach would help mitigate issues stemming from government regulations and enhance the company's supply chain resilience.

2. **Renegotiate contracts:** Negotiate contract terms with existing suppliers to potentially obtain more favorable pricing or explore alternative pricing models. To begin with, Deccan should avoid long-term contracts, or alternatively, they should negotiate agreements that include clauses enabling them to terminate the contract before its specified duration with minimal advance notice.
3. **Vertical integration:** Deccan might consider vertically integrating its production for raw material G, especially if the cost benefits outweigh the investment and operational complexities. However, a thorough feasibility study is crucial before pursuing this option. For example: if they opt to manufacture any raw materials, they should also produce the components necessary for manufacturing those raw materials, ensuring that these components are locally accessible and viable.
4. **Cost Optimization Strategies:** The analysis reveals potential savings in utility consumption. Deccan should explore ways to sustain these reductions and identify further opportunities for utility cost optimization.
5. **Contractual Considerations:** The tri-party agreement for raw material procurement seems to have limited Deccan's ability to negotiate prices and source from cheaper alternatives. Deccan should re-evaluate such agreements in future negotiations to ensure more flexibility in sourcing and pricing.

5. CHAPTER 3: PROJECT 2 - "ANALYZING FACTORS LEADING TO PAYMENT DELAYS AND STRATEGIES FOR IMPROVING PAYMENT EFFICIENCY: A CASE STUDY OF DECCAN FINE CHEMICALS PVT. LTD"

5.1. Introduction to the Research Topic

In today's dynamic business landscape, effective financial management is imperative for the sustainability and growth of organizations. Among the numerous challenges faced by companies, managing cash flow stands out as a critical aspect influencing operational agility and financial stability. Payment delays, whether from customers or vendors, pose significant hurdles for businesses, impacting liquidity, working capital management, and ultimately, profitability.

This research endeavors to delve into the intricate web of factors contributing to payment delays within Deccan Fine Chemicals Pvt. Ltd (Deccan), a leading player in the chemical manufacturing industry. Deccan operates in a dynamic environment characterized by evolving market demands, supply chain complexities, and regulatory constraints. Amidst this backdrop, the timely receipt of payments from customers and the prompt settlement of obligations to vendors are paramount for sustaining seamless business operations.

Understanding the root causes of payment delays requires a multifaceted approach that encompasses various dimensions of organizational operations. Factors such as inefficient invoicing processes, discrepancies in billing and payment terms, fluctuations in market demand, and liquidity constraints among customers can all contribute to delays in payment cycles. Additionally, external factors such as economic downturns, geopolitical uncertainties, and industry-specific challenges further exacerbate the complexity of the issue.

Against this backdrop, this research endeavors to conduct a comprehensive analysis of the factors underlying payment delays within Deccan. Through a blend of quantitative data analysis, qualitative research methods, and a case study approach, the research aim to dissect the intricacies of the company's payment ecosystem. By engaging with key stakeholders, including finance professionals, material professionals, and employees, this research seek to gain deeper insights into the nuances of payment processes and identify critical pain points.

Building upon the findings of the analysis, this study will formulate pragmatic strategies tailored to address the specific challenges faced by Deccan Fine Chemicals in mitigating payment delays. By blending academic rigor with practical insights, we aim to offer actionable recommendations that can empower the organization to navigate the complexities of the contemporary business landscape with confidence and resilience.

5.2. Literature Review

(Chadee et al., 2023)This article investigates the impact of delayed payments on contractors in the construction industry, particularly focusing on Small Island Developing States (SIDS). It identifies unstable political climates and delays in employers' issuance of variation orders as primary causes, while effects include delays in supplier payments, delays in paying financial institutions, and increased contractor debt. Employing a mixed-methods approach, the study quantifies the prevalence and significance of delayed payments through surveys and statistical analyses, complemented by qualitative insights from interviews and literature reviews. Major findings of this study includes the development of a structural equation model illustrating the relationships between causes and effects, alongside the establishment of a qualitative risk response framework to mitigate associated risks. The study offers comprehensive recommendations for addressing

political, legal, financial, and social risks, aiming to inform construction practices and policies. However, (Andalib et al., 2018) this research proposes a novel cash flow prediction model for construction projects, aiming to mitigate financial risks, particularly those arising from delays in owner payments and liquidity issues. It incorporates factors such as the Budget Realization Index (BR) and intertemporal correlation of payments to provide accurate predictions. Through sensitivity analysis, the model's response to variations in input parameters like the BR distribution type, BR mean and standard deviation, intertemporal correlation coefficient (ρBR), and decay factor (δ) is examined. Major findings indicate significant impacts of these variables on financial parameters such as financing cost (FC) and minimum working capital (MWC). Despite assumptions like the absence of a relationship between project pace and financial conditions, the model demonstrates potential in informing bidding strategies and managing project finances effectively. However, limitations of this research include the lack of a framework for categorizing owners based on payment behavior, suggesting avenues for future research to refine the model and explore more complex project dynamics. Similarly, (Okereke, 2020) this study investigates contractors' satisfaction with payment terms impacting construction cash flow under traditionally procured and design and build contracts, aiming to identify variations in satisfaction levels among contractors of different sizes and subcontractors. Employing a questionnaire survey methodology with 350 respondents from South Eastern Nigeria, the study analyzes factors such as valuation intervals, payment methods, time lag between commitments and payments, and retention percentages. While contractors generally express satisfaction with certain payment terms, subcontractors are often dissatisfied, particularly with delayed payments and retentions. The study suggests the need for innovative payment systems to address these issues and calls for further research to develop more satisfactory solutions. Also, (Van Der Vliet et al., 2015) The article

delves into the complexities of payment term decisions in supply chain finance, particularly focusing on the impact of payment term extensions and reverse factoring arrangements on financing costs. Through experiments and mathematical modeling, it investigates variables such as payment terms, financing costs, and opportunity cost rates for holding receivables, analyzing their interactions and implications for supply chain performance. The study finds that increasing payment terms generally leads to higher financing costs, influenced by factors like demand uncertainty, net profit margin, and operating leverage. The study suggests nuanced considerations for decision-makers, emphasizing the importance of understanding the dynamic relationships between payment terms, financing strategies, inventory management, and cash flow dynamics. (Heydari et al., 2017) This article explores supply chain coordination in a two-stage supply chain with a two-level delay-in-payments scheme, focusing on how the supplier can induce the retailer to optimize ordering and credit decisions while stimulating customer demand through trade credit offerings. Key contributions include proposing a coordination scheme to reduce operational costs and increase sales volume, considering both supplier and retailer trade credit decisions as variables. The study's findings underscore the effectiveness of coordinated decision-making in enhancing profitability, with centralized approaches leading to longer credit periods and larger order quantities. The research also offers managerial insights and suggests future research avenues to improve supply chain coordination.

5.3. Research Gap

While numerous studies have examined impact of payment delays within the construction industry, there is a notable absence of research on delayed payments in the manufacturing sector. Similarly, while some studies have investigated the effects of delayed payments by companies to their

employees and suppliers, there is a scarcity of research addressing the impact of delayed payments to company itself. This research gap highlights the need for studies that explore the impact of delayed payment on manufacturing firms, shedding light on the financial, operational, and strategic challenges they face as a result. Additionally, understanding the implications of delayed payments to companies can provide valuable insights into cash flow management, financial stability, supplier relationships, and overall business sustainability. By filling these gaps in the literature, researchers can contribute to a more comprehensive understanding of the broader impact of payment delays across various industries and stakeholders.

5.4. Research Questions

1. How do different customer segments differ in their payment behavior at Deccan?
2. What are the primary sources of payment delays, and what factors contribute to these delays within the company?
3. How has payment delays impacted the cash flow of Deccan for the specified time period?

5.5. Research Objectives

1. To compare and analyze the payment behavior of different customer segments at Deccan to understand variations and patterns.
2. To identify the source and factors contributing to payment delays.
3. Analyze the implications of payment delays on the cash flow of Deccan for a specified time period.

5.6. Research Methodology

The study was conducted using secondary data obtained from the company from January 2023 to December 2023. This data comprised detailed invoice records including customer information and payment transactions, forming the basis for the research conducted. Data filtering and analysis using Excel were employed to categorize customers based on payment terms and types of delays. Comparative study was conducted to compare domestic customers with the international customers. The study evaluates the impact of payment delay on the company's cash flow through statistical testing.

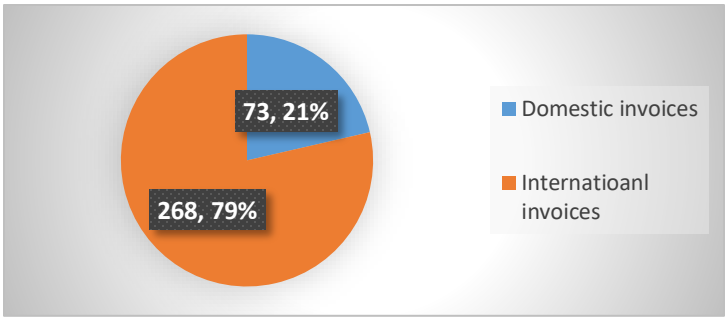
5.7. Data Analysis

5.7.1. Analysis to differentiate between Domestic and International Customers.

DOMESTIC CUSTOMERS	
Total number of customers	4
Total number of invoices	73
Total value (in Cr)	71.18
Payment term days	60
Average days of payment	70
Is there an efficiency in payment cycle?	NO

INTERNATIONAL CUSTOMERS			
Total number of customers	7		
Total number of invoices	114	3	151
Total value (in Cr)	549.88	5.35	474.90
Payment term days	30	60	120
Average days of payment	29	23	44
Is there an efficiency in payment cycle?	YES[2]	YES[3]	YES

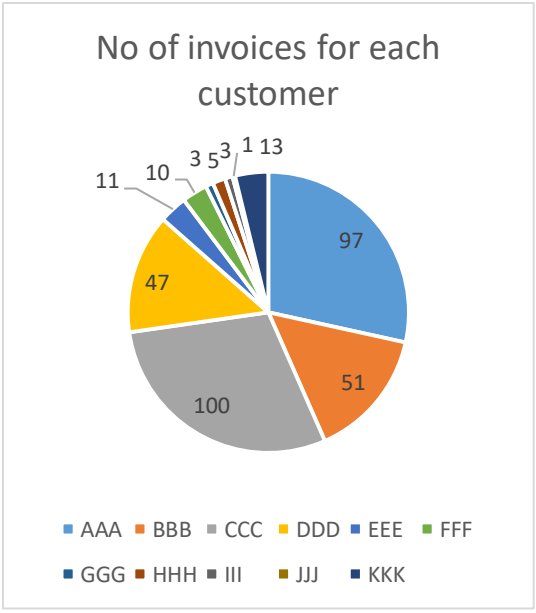
[2] Separate analysis has been done on this in specific with customer AAA whose payment term is from the date of BL, to understand the payment cycle due to the delay observed from company's side.
[3] The efficiency in payment cycle of these customers were on the account of Supplier Finance Scheme.



As can be seen in the above pie chart, the company deals more with international customers which is about 79% than the domestic customers which accounts to only 21%. This also indicates that the company focuses more on the exports. It can also be identified from the table that the interntional customers are more efficient while making the payments given all payment terms whereas domestic customers are found to be inefficient in amking the payments. Domestic customers are found to delay the payments by almost 10 days while the international customers pays well in advance.

5.7.2. Analysis to identify which customers majorly contribute to the company's revenue

Customers	No of invoices	Total value (in Cr)	%
AAA	97	469.11	42.6
BBB	51	179.88	16.3
CCC	100	295.02	26.8
DDD	47	43.65	4.0
EEE	11	10.14	0.9
FFF	10	12.55	1.1
GGG	3	7.83	0.7
HHH	5	4.84	0.4
III	3	5.35	0.5
JJJ	1	1.92	0.2
KKK	13	71.03	6.4
TOTAL	**341**	**1101.32**	



Customers AAA, BBB and CCC contributes majorly towards the total value that is about 85.7%. Due to this major contribution, further analysis will be focused on just these 3 customers.

5.7.3. Analysis of Customer AAA, whose payment term is from the date of BL

CUSTOMER AAA	
Total value (in Cr)	**469.11**
Payment term days[4]	**30**
Average days of payment from invoice date (A)	**48**
Average days of payment from BL date[5] (B)	**25**
Is there an efficiency in payment cycle?	**YES**
Time taken by the company from invoice date to issue BL (C) (A-B)	**20**
Time taken by the company excluding the ideal baseline duration i.e. 7 days[6] (C – 7)	**13**

Different payment terms were provided to various customers, tailored to the specific agreements. For Customer AAA, the payment term was stipulated from the date of Bill of Lading (BL). This means that the Customer AAA was required to settle payments within the specified number of days from the issuance of BL. In contrast, the other customers were granted payment terms calculated from the date of invoice. These variations in payment terms were established to accommodate the diverse needs of different customers.

[4] Payment term days refers to the number of days within which a payment must be made by the buyer to the seller, which in this case is from the Customer to the Company (Deccan) respectively.
[5] A Bill of Lading is a legal document issued by a carrier to acknowledge receipt of cargo for shipment.
[6] Calculation of Baseline Duration has been given in part 5.7.3.1

Customer AAA has a total transaction value of 469.11 with a payment term of 30 days. While the customer efficiently settle payment within term from the Bill of Lading (BL) date, averaging 25 days, payments were seen to be delayed beyond the invoice date, with an average of approx. 48 days. This indicates that the company delayed in issuing BL from the date of invoice by approx. 20 days.

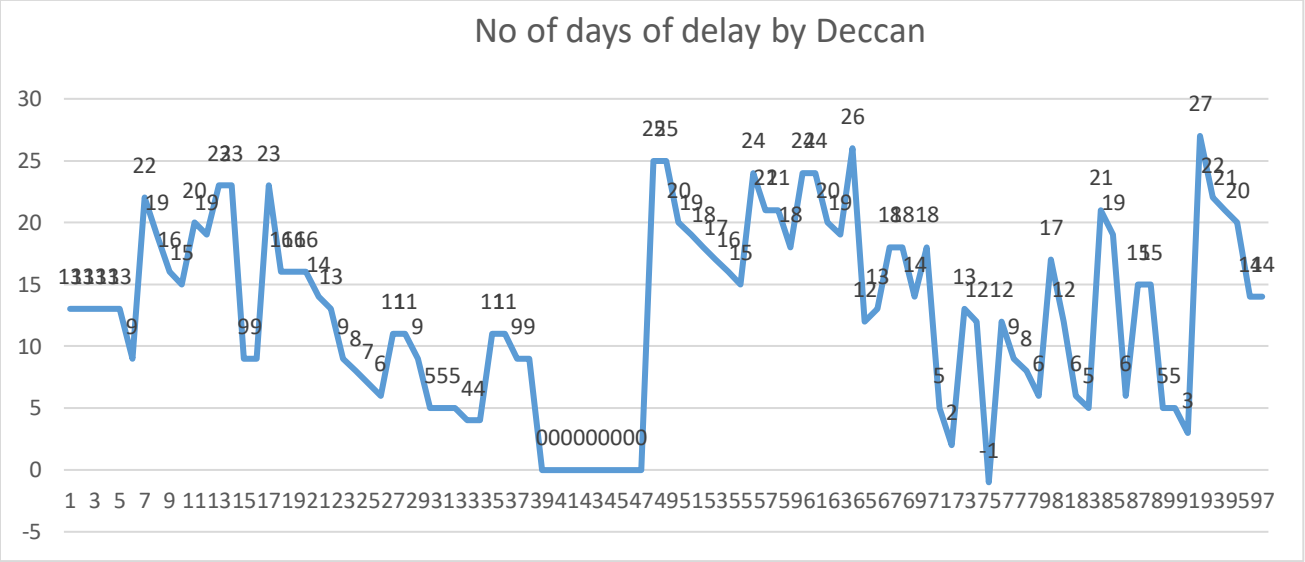
5.7.3.1. Calculation of Baseline Duration

Baseline Duration	
Particulars	**Days**
Gate Closure	**3**
Transit	**2**
Custom Clearance	**2**
Total	**7**

It has been identified that company requires 3 days for gate closure procedure, 2 days for transit and 2 days for custom clearance, contributing to an ideal baseline duration of 7 days in the overall process. These additional days in procedural steps prolong the time between the invoice and issuance of BL, potentially impacting cash flow and operation efficiency.

Excluding these 7 days of ideal baseline duration, the company is seen to be delaying by approx. 13 days.

5.7.3.2. To identify the points the company achieved its best and worst performance



The above graph illustrates the company's performance in generating BL in relation to the invoice date, excluding the baseline duration of 7 days. Notably, there is a point where the company achieved its peak efficiency by producing BL 1 days ahead of schedule. The timely generation of BL signifies a proactive approach that minimizes delays, thereby mitigating adverse effects on cash flow. It underscores the potential for the company to enhance financial performance by consistently operating with efficiency. By optimizing processes and ensuring timely execution, the company can prevent delays, maintain a favorable financial position, and foster improved operation outcomes.

The company's performance reached its lowest point when experiencing a delay of 27 days in generating BL, excluding the baseline duration of 7 days. This significant delay underscores a period of heightened inefficiency in timely generation of BL. Such inefficiencies can have detrimental effect on various aspects of company's operations, including cash flow.

5.7.4. Supplier Finance Scheme

A Supplier Finance Scheme is a financial arrangement that enables a company to optimize its cash flow by extending the payment terms to its customers while ensuring that it receives early payment. In this a financial institution (often a bank) steps in and offers early payment to the company on behalf of its customer. The customers then repays the financial institution according to the originally negotiated term without impacting the company's cash flow negatively.

Deccan has implemented a Supplier Finance Scheme with its customers in Singapore, facilitated by a third-party financial institution based in Singapore. The decision to engage this institution was motivated by its offering of lower interest rates compared to Indian banks. Under this arrangement, the Singaporean bank is obliged to make the payment to Deccan within 15 days from the date of invoice, at the agreed-upon interest rate borne by Deccan. According to the scheme, customers are required to settle the entire payment with the bank within a negotiated payment term of 120 days. This strategy initiative not only aids Deccan in managing its cash flow efficiently but also fosters stronger relationship with its customers.

5.7.4.1. Analysis of Customer BBB, whose payment term is from the date of invoice and entitled under Supplier Finance Scheme

CUSTOMER BBB	
Total value (in Cr)	**179.88**
Payment term days	**120**
Average days of payment	**27**
Is there an efficiency in payment cycle?	**YES**

For Customer BBB, the payment term was from the date of invoice, which means that the Customer BBB was required to settle payments within the specified number of days from the date of invoice.

Customer BBB was engaged in transaction totaling 179.88 with a payment term of 120 days, yet demonstrates efficiency by consistently settling invoices within an average of approx. 27 days. Despite the extended payment window, their prompt payment behavior underscore reliability and financial stability, indicating a positive relationship with the company.

5.7.4.2. Analysis of Customer CCC, whose payment term is from the date of invoice and entitled under Supplier Finance Scheme

CUSTOMER CCC	
Total value (in Cr)	**295.02**
Payment term days	**120**
Average days of payment	**33**
Is there an efficiency in payment cycle?	**YES**

Same as Customer BBB, the payment term for Customer CCC was from the date of invoice, which means that the Customer CCC was required to settle payments within the specified number of days from the date of invoice.

With transactions amounting to 295.02 and a 120 days payment term, Customer showcases efficiency by consistently settling invoices within an average of approx. 33 days. Despite the

extended payment window, their punctuality reflects financial reliability, fostering a positive relationship with the company.

5.7.5. Financial implications of delay in payment on the company's profit margin

5.7.5.1. In case of Customer AAA, the company detailed the payment of 469.11 Crores by 13days.

Particulars	
Total amount that was delayed in Cr (A)	469.11
Interest rate (B)	7.225
Total days delayed/365 days (C)	0.035616
Total loss in Cr ((A+B+C)/100)	1.207155

The above table outlines the financial implications of delay payments, indicating a total delayed amount of 469.11Cr, subject to an interest rate of 7.225%. With a delay equivalent to 0.035616 of a year, the total loss incurred stands at approximately 1.21Cr.

5.7.5.2. In case of Customer BBB, as per supplier finance scheme, company was supposed receive the payment in 15 days, however, the company received the payment in 27 days which means that the company got the money 12 days late.

Particulars	
Total amount that was delayed in Cr (A)	179.88
Interest rate (B)	7.225
Total days delayed/365 days (C)	0.032877
Total loss in Cr ((A+B+C)/100)	0.427277

The above table outlines the financial implications of delay payments, indicating a total delayed amount of 179.88Cr, subject to an interest rate of 7.225%. With a delay equivalent to 0.032877of a year, the total loss incurred stands at approximately 0.43Cr.

5.7.5.3. In case of Customer CCC, as per supplier finance scheme, company was supposed receive the payment in 15 days, however, the company received the payment in 33 days which means that the company got the money 18 days late.

Particulars	
Total amount that was delayed in Cr (A)	295.02
Interest rate (B)	7.225
Total days delayed/365 days (C)	0.049315
Total loss in Cr ((A+B+C)/100)	1.05116

The above table outlines the financial implications of delay payments, indicating a total delayed amount of 295.02Cr, subject to an interest rate of 7.225%. With a delay equivalent to 0.032877of a year, the total loss incurred stands at approximately 1.05Cr.

5.8. Research Findings

The analysis highlights that the company primarily serves international customers comprising of 79% of its total customers, indicating an export focused strategy. While international customers' are found to exhibit prompt payment behaviors, domestic customers' exhibits delay averaging around 10 days. Notably, Customers AAA, BBB and CCC collectively contributes significantly to the company's revenue. All these 3 Customers are found to be efficient meeting their payment obligations within the specified time. However, the analyses reveals that delay primarily stem from the company's operational processes rather than the customers' payment behavior. Addressing

challenges regarding timely payment in necessary for the company to optimize operational processes. Also, the implementation of Supplier Finance Scheme offers tangible benefits in terms of cash flow optimization and customer relationship enhancement underscoring the importance of continued utilization of this initiative.

5.9. Conclusion

The analysis reveals several key insights into the company's operations and customer relationships. Despite a focus on international markets, the company faces challenges in optimizing payment processes, particularly with domestic customers. Efforts to streamline operational procedures, especially in BL generation are crucial to mitigate delays and to improve cash flow. The company should prioritize operational efficiency enhancement and continue cultivating positive relationships with key customers to sustain growth and competitiveness in the market.

5.10. Managerial implications

1. Customers who agree payment term from the date of BL should pay some portion of increased amount due to delay, as negotiated by the company. This measure not only incentivizes prompt payment but also compensates the company for the financial losses incurred due to payment delays.
2. While conducting the research, it was identified that no shipping data was available with the company and neither could it be recovered from the shipping sites nor ports. Given this complexity of international shipping processes and the potential for delays at various stages, it

is crucial for companies to maintain comprehensive records of dispatch dates. While shipping sites or ports might not always provide readily available data on dispatch dates, internal records can serve as invaluable sources of information for analyzing and addressing delays. By maintaining meticulous records, company can identify patterns, pinpoint areas for improvement and ultimately enhance their operational efficiencies.

6. CHAPTER 4: TASKS HANDLED

1. TASK 1: Filing of Input Tax Credit (ITC) Documents

In a manufacturing company such as Deccan, managing input tax credit (ITC) documentation is essential to maintaining compliance and streamlining financial operations. The process includes keeping track of records pertaining to taxes paid on materials used in production, which can be reclaimed to reduce tax obligations. In this, I had to make sure that all legal requirements were met by gaining a thorough understanding of tax compliance regulations. We also had to identify different types of invoice copies and select according to the requirements.

2. TASK 2: Organizing Data Using Excel Spreadsheet

I was given raw materials and vendor details such as material names, vendor names, vendor contact information, pricing, quantity, delivery terms, etc. I had to input the gathered information separately for different raw materials into excel spreadsheet according to the predefined formats, ensuring accuracy and consistency in data entry to avoid errors. This task helps the company to streamline their procurement process, having easy access of information

to quickly identify and engage with the suppliers and place orders. Also, it helps the firm to maintain a softcopy for future reference.

3. **TASK 3: Creation of A Financial Model for Material Department inorder to Streamline the Process:**

During my time at Deccan Chemicals, I was tasked with creating a comprehensive financial model for the Materials Department. The objective was to streamline the process of tracking raw material procurement, transportation costs, and overall efficiency. To achieve this, I implemented several functionalities using Excel formulas, primarily leveraging the VLOOKUP and SUM functions. I integrated date tracking capabilities into the model. Upon entering the respective dates of material collection, the model automatically calculated the time difference, providing valuable insights into transportation efficiency. Furthermore, I incorporated a mechanism to record and analyze petrol expenditure associated with each collection. By inputting the date and the amount spent on petrol, the model facilitated a granular understanding of transportation costs, aiding in budgeting and resource allocation decisions. Moreover, to enhance accountability and oversight, I linked employee codes to the individuals responsible for overseeing each collection. Through the application of the VLOOKUP formula, the model effortlessly identified the designated employee, ensuring clear ownership and accountability for each procurement activity. Finally, to provide a comprehensive overview of monthly expenditure, I employed the SUM formula to aggregate the total transportation costs incurred within a given month. This enabled management to assess monthly expenses at a glance, facilitating informed decision-making and financial

planning. This initiative not only optimized operational efficiency but also empowered the organization with actionable insights for strategic planning and resource optimization.

7. CHAPTER 5: LEARNINGS

Through my research at Deccan, I encountered several concepts like the Supplier Finance Scheme, which was previously unfamiliar to me. This initiative shed light on how such proactive financial strategies can significantly benefit a company's bottom line. Furthermore, delving into company's reconciliation process offered me insights into a systematic approach for maintaining transparency and efficiency in customer dealings. The quest for port data underscored the importance of meticulous record-keeping throughout the supply chain process, emphasizing the importance of thorough data management to make well-informed decisions.

Engaging in the meticulous task of filing input tax credit documents provided me with a profound understanding of tax compliance regulations, emphasizing the critical importance of detailing. Each document carried significant weight, with even the slightest negligence or potential loss of even one would bear substantial consequences for the company's financial standing. This experience underscored the immense value of thoroughness and precision in documentation, as any omission could have far-reaching consequences.

Similarly, while organizing data and inputting it into Excel spreadsheets may seem straightforward, I realized the inherent complexity and tedious nature of this task. Ensuring data accuracy became paramount, as errors in material names, pricing or quantity details could profoundly impact procurement decisions and inventory management. These activities collectively emphasized the indispensable value of documentation and record-keeping, particularly for future reference.

During my internship, I also understood the critical significance of effective communication skills in navigating corporate environments, fostering relationships, and articulating ideas convincingly. Overall, my internship at Deccan provided invaluable insights into corporate dynamics, equipping me with a deeper understanding of financial management, communication strategies, and essential skills needed to thrive in the professional realm.

8. CHAPTER 6: CHALLENGES

1. **Gathering data:**

   Gathering financial data for my research proved to be challenging due to security and confidentiality concerns within the company. The hesitation of the company to share financial information necessitated obtaining data from the material data instead. This added complexities to my research process.

2. **To manage time with the manager:**

   As a subordinate under the department head, scheduling discussions with the manager posed difficulty due to his busy schedule. Finding time for clarification was challenging which potentially delayed guidance required for analysis.

3. **Data given in parts:**

   I was given data in parts due to which I had to constantly make revisions and adjustments to previous data analysis. Working with partial data increased the time and efforts required for analysis and increased the risk of inaccuracies in the findings.

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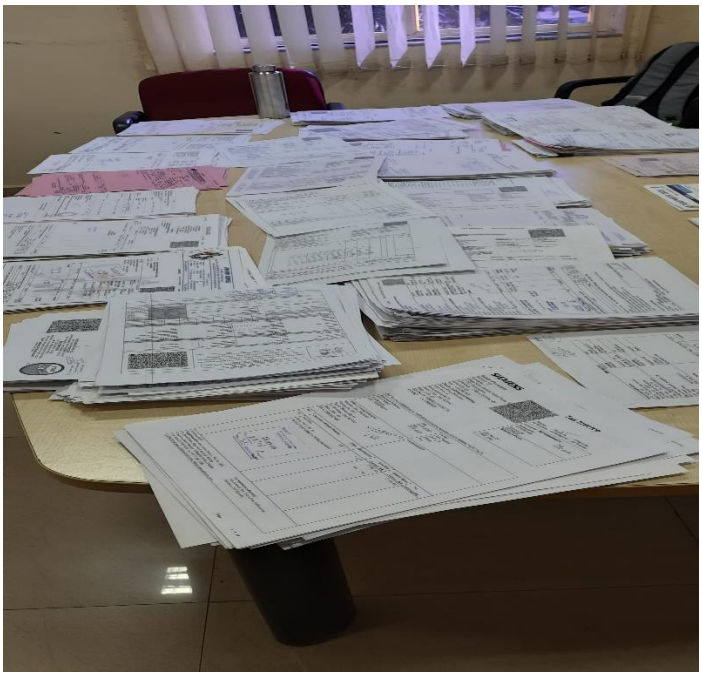
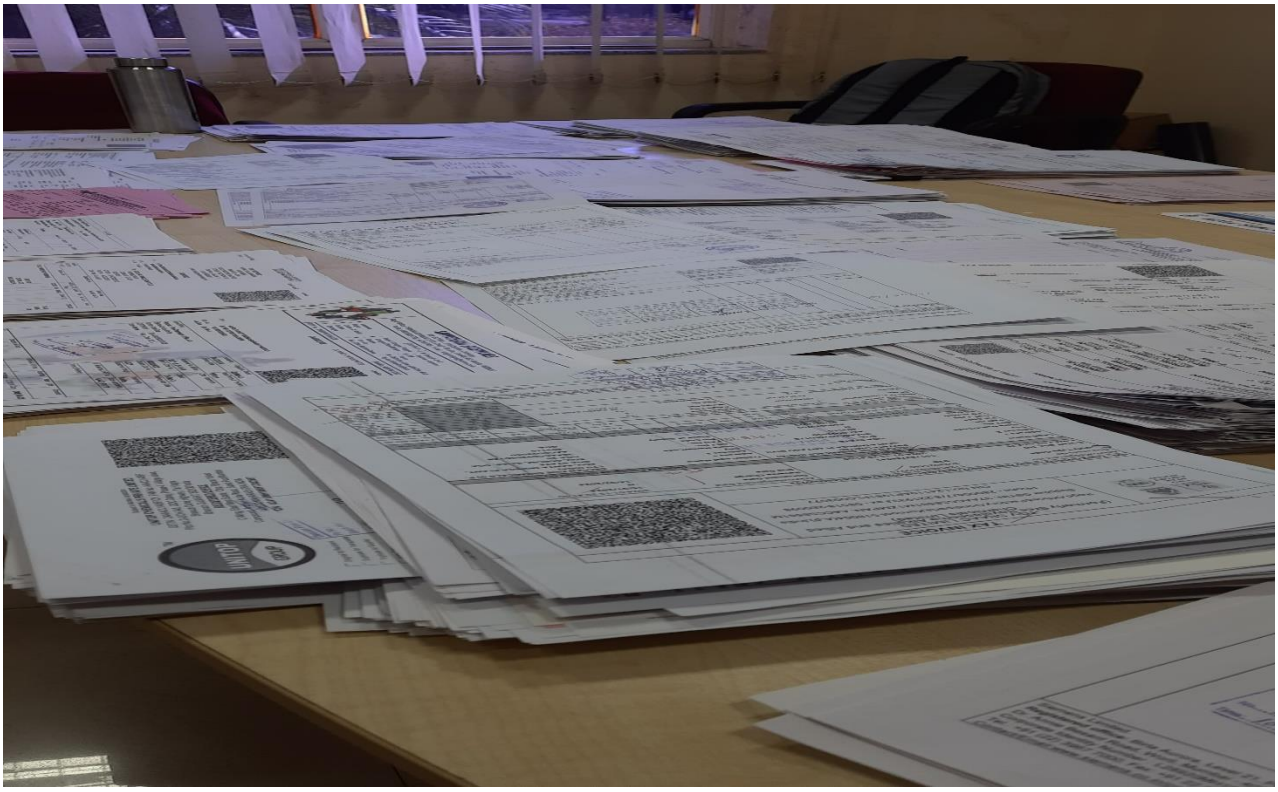
10. APPENDIX I:

Samples of the work done





11. APPENDIX II

Photos while you are at work